



RF Exposure Evaluation Report

Equipment : Wireless STB
Brand Name : AT&T
Model No. : C71KW-400, C71KWBP-400
FCC ID : NKR-ATTC71KW
Standard : 47 CFR Part 2.1091
Applicant : Wistron NeWeb Corporation
20 Park Avenue II Hsinchu Science Park Hsinchu,
308 Taiwan
Manufacturer : Wistron NeWeb Corporation
20 Park Avenue II Hsinchu Science Park Hsinchu,
308 Taiwan

The product sample received on Aug. 18, 2017 and completely tested on Oct. 16, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091 and pass the limit.

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Cliff Chang
SPORTON INTERNATIONAL INC.





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PHOTOGRAPHS OF EUT V01		

REVISION HISTORY

[illegible]

1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: DSSS (GFSK)

1.2 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Brand Name	Model Name	Description
AT&T	C71KW-400	There is nothing different of two models, just for different marketing use.
	C71KWBP-400	

From the above models, model: C71KW-400 was selected as representative model for the test and its data was recorded in this report.

1.3 Testing Location

Testing Location		
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	6.30	29.69	35.99	3.97192	20	0.79019	1.00000
5.2G;D1D	7.60	27.80	35.40	3.46737	20	0.68981	1.00000
5.3G;D1D	7.50	22.00	29.50	0.89125	20	0.17731	1.00000
5.6G;D1D	7.00	22.92	29.92	0.98175	20	0.19531	1.00000
5.8G;D1D	7.10	27.91	35.01	3.16957	20	0.63057	1.00000
2.4G;BT-BR	1.11	10.98	12.09	0.01618	20	0.00322	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+ Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	6.30	29.69	35.99	3.97192	20	0.79019	1.00000	0.79019
2.4G;BT-BR	1.11	10.98	12.09	0.01618	20	0.00322	1.00000	0.00322
							Sum Ratio	0.79341
							Ratio Limit	1

Simultaneous Transmission Analysis Mode: WLAN 5GHz+ Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
5.2G;D1D	7.60	27.80	35.40	3.46737	20	0.68981	1.00000	0.68981
2.4G;BT-BR	1.11	10.98	12.09	0.01618	20	0.00322	1.00000	0.00322
							Sum Ratio	0.69303
							Ratio Limit	1